UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
RAINEY, ROBERT R

ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

	Application No.	Applicant(s)
Office Action Summary	10/541,093	FUJINE ET AL.
	Examiner	Art Unit	
	ROBERT R. RAINEY	2629	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2008*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22 and 24-26* is/are pending in the application.

    4a) Of the above claim(s) *2,3,6-12,14,16-22,25 and 26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,5,13, 15, and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 August 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   The amendments to claims 1 and 5 and Figures 15-21 effectively overcome the

objections to them raised in the previous office action.

2.   Cancellation of claim 23 makes moot the 35 U.S.C. §101 rejection of claim 21 in

the previous office action.

3.   Applicant's arguments filed 8/15/2008 have been fully considered but they are

not persuasive.

On page 15 applicants address the §103 rejections of claims 1, 13, 23 and

24. First, applicants argues that IDE does not teach a "signal type detection

section". Examiner disagrees. By way of further explanation, examiner points out

that in order for the INPUT VIDEO SELECTING SIGNAL to have an effect, block

40, for example, must be able to determine the type of video signal to be

processed based on the INPUT VIDEO SELECTING SIGNAL. Thus it must

inherently have a "signal type detection section".

Continuing on page 15 and on to page 16 applicants argue that since Lee

does not teach an IP conversion section and since Ide addresses a problem

prominent in plasma display panels rather than LCDs neither each reference

individually nor their combination teaches changing the parameters of the

enhancing conversion based on the type of signal detected. Examiner disagrees.

Ide points out that various display types, including LCDs, are expected to function with multiple types of video input and that the signal processing parameters must change from one type to another (see for example 1:10-40). Thus the teachings relied upon are applicable to LCDs. That IDE goes on to describe particular steps and structure to mitigate problems caused by the noise of a plasma display does not detract from the teachings available for LCDs. Regarding the argument that neither reference individually encounters the overshoot drive enhancing conversion. First, overshoot drive is not mentioned in the claims and enhancing conversion can reasonably be interpreted to cover more than overshoot drive processing. Second, the combination of Lee and Ide, does include overshoot drive processing with I-P conversion as described in the rejections of the previous office action. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)

Beginning on page 17 applicants address the §103 rejections of claims 4, 5 and 15. Applicants argue that Nitta does not disclose the problem with overshoot drive when a signal type of input image data is an interlace signal and the interlace signal is converted to the progressive signal. Examiner disagrees. In fact in the following paragraph applicants argue that Nitta teaches that "... if the interlace signal is converted to the progressive signal, the overshoot processing is not performed for a progressive signal that is converted from the interlace

signal." This agrees with examiner's position. Not performing the overshoot

processing is merely an end-point condition since in this case the overshoot drive

enhancing conversion has been reduced to zero or unity depending on how one

looks at it.

Note

4.   As a notational convenience Examiner uses the notation "I-P" in some instances

to indicate a signal originally in an interlaced format that is converted to a progressive

format and also sometimes uses "I" to represent "interlaced format" and "P" to represent

"progressive format".

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

6.   **Claims 1, 13, and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable

over U.S. Patent No. 7,095,393 to *Lee* ("*Lee*") in view of U.S. Patent No. 6,753,831 to

Ide et al. ("*Ide*").

As to **claim 1**, *Lee* discloses a liquid crystal display apparatus that

corrects optical response characteristics of a liquid crystal display panel, by

subjecting image data supplied to the liquid crystal display panel to enhancing

conversion at least in accordance with image data of a directly previous vertical period and image data of a current vertical period (see for example column 12 lines 47-57), the liquid crystal display apparatus comprising: signal type detection section for detecting whether a signal type of input image data is of a particular type (see for example column 13 lines 18-20, especially "static graphics or moving graphics"); and enhancing conversion section (see for example Figs. 8 and 9) for subjecting the image data to the enhancing conversion, in a direction of gray level transition (see for example Fig. 5), in accordance with a result of detection by the signal type detection section, a degree of the enhancing conversion of the image data by the enhancing conversion section being varied (see for example Fig. 9 and column 13 lines 11-24, wherein lines 18-20 especially mention varying the conversion based on signal type).

Lee does not expressly disclose a signal type detection section for detecting whether a signal type of input image data is a progressive signal or an interlace signal and an I/P conversion section for converting an interlace signal to image data that is a progressive signal, if the input image data is an interlace signal; and varying the degree of the enhancing conversion of the image data by the enhancing conversion section based upon whether the input image data is a progressive signal or an interlace signal.

Ide discloses a display device designed to ensure that image processing parameters are transferred in response to switching between input video signals (see abstract) and in particular: a signal type detection section for detecting

whether a signal type of input image data is a progressive signal or an interlace

signal (see for example Fig. 1 label "INPUT VIDEO SELECTING SIGNAL" and

item 1, noting that of the input labels to item 1 at least the "PC VIDEO SIGNAL"

is a progressive signal and at least the "NTSC TV SIGNAL" is an interlaced

signal) and an I/P conversion section for converting an interlace signal to image

data that is a progressive signal, if the input image data is an interlace signal

(see for example Fig. 4 item 33 and column 4 lines 23-27); and varying the

degree of the enhancing conversion of the image data by the enhancing

conversion section based upon whether the input image data is a progressive

signal or an interlace signal (see for example column 3 lines 60-65 and column 4

lines 8-46 and Fig. 4 noting that each of items 32, 34, 35, and 36 perform an

enhancement, i.e. enhancing conversion, of the video data based upon

parameters that are specific to the type of video signal).

  Lee and *Ide* are analogous art because they are from the same field of

endeavor, which is flat panel type displays.

  At the time of invention, it would have been obvious to a person of

ordinary skill in the art to add interlaced or progressive detection, I/P conversion

and differentiation of image processing based upon interlaced or progressive

detection as disclosed by *Ide* to the system disclosed by *Lee*.   The

suggestion/motivation would have been to provide advantages such as to

provide signal processing appropriate to the signal type (see for example *Lee*

column 1 lines 22-33).

Claim **13** represents the method implicit in the apparatus claimed in claim 1 and is rejected on the same grounds and arguments as claim 1.

Claim **24** is rejected on the same grounds and arguments as claim 1 with the following additional grounds arguments:

Examiner takes official notice that stored program control of image processing was well known to those skilled in the art at the time of the invention as was storing programs on a recording medium.

It would have been obvious to one of ordinary skill in the art at the time of the invention to have provided a program for controlling the liquid crystal display according to the method implicit in the rejection of claim 1 and to have stored this program on a recording medium.

7.   Claims **4, 5, and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,095,393 to *Lee* ("*Lee*") in view of U.S. Patent No. 6,753,831 to *Ide et al.* ("*Ide*") and further in view of JP2003143556 to *Nitta et al.* ("*Nitta*").

As to **claim 4**, in addition to the rejection of claim 1 over *Lee* and *Ide*:

Lee further discloses the use of multiple table memories that are referred to based upon the value of a parameter that affects display performance that store an enhancing conversion parameter specified by the image data of the

current vertical period and the image data of the directly previous vertical period,

the particular table being referred to according to the value of the parameter (see

for example column 9 lines 3-13), the enhancing conversion means including an

operation section that performs, using the enhancing conversion parameter read

out from the selected table memory in accordance with the result of detection of

the parameter value, an operation on the image data so as to enhance the image

data (see for example column 9 lines 3-13 and column 2 lines 25-33).

Ide further discloses a first table memory that stores an enhancing

conversion parameter, the first table memory being referred to when the input

image data is a progressive signal (see for example column 3 lines 60-65 in

which the first table memory corresponds to the table memory containing "the

image processing parameter group DP" corresponding to "the PC video signal");

and a second table memory that stores an enhancing conversion parameter, the

second table memory being referred to when the input image data is an interlace

signal (see for example column 3 lines 60-65 in which the first table memory

corresponds to the table memory containing "the image processing parameter

group DP" corresponding to "the NTSC television signal"), the enhancing

conversion means including an operation section that performs, using the

enhancing conversion parameter read out from the first or second table memory

in accordance with the result of the detection by the signal type detection means,

an operation on the image data so as to enhance the image data (see for

example column 3 lines 60-65 and column 4 lines 8-46 and Fig. 4 noting that

each of items 32, 34, 35, and 36 perform an enhancement, i.e. perform an operation on the image data so as to enhance the image data, of the video data based upon parameters that are specific to the type of video signal).

Lee and Ide do not expressly disclose tables that contain parameters specified by the image data of the current vertical period and the image data of the directly previous vertical period that are referred to according to whether the input image data is interlaced or progressive.

Nitta discloses a display device with I-P conversion and overdrive processing and that there are issues with overdrive processing of I-P converted video separate from those of native P video that make it advantageous to perform overdrive processing of I-P converted video differently than overdrive processing of native progressive video (see for example abstract).

Lee, Ide, and Nitta are analogous art because they are from the same field of endeavor, which is flat panel type displays.

Since the explanation of the obviousness of the invention over the prior art is somewhat involved, Examiner will first summarize the teachings of the combination of Lee and Ide as made above.

Lee teaches a method of overdrive processing that involves switching between overdrive parameter tables in order to adapt the overdrive to changing needs (note that Lee teaches that several inputs may be used to determine the tables referenced, mentioning specifically "temperature, taste of a user, and environment" at column 2 lines 25-33, elsewhere still or moving images are given

as two examples of environment differences). *Ide* teaches receiving multiple video types including interlaced and progressive video types and performing I-P conversion on the interlaced video and varying image processing based on the detected video type. This combination provides a plurality of overdrive parameter tables indexed by a plurality of inputs. The only thing lacking is one of these inputs being P versus I-P. Refer to this combination as *Lee/Ide*.

Thus the prior art included a device, *Lee/Ide*, similar to that of the claimed invention. There were design incentives and market forces that would have prompted adaptation of *Lee/Ide*, including for example: a market force, which was the drive to improve image quality; a market force, which was to speed development by reusing a known implementation, that is there was an incentive to adapt the multiple table method of *Lee/Ide* to improve the display of the various video types rather than try to develop some other type of scheme. The differences between the prior art, *Lee/Ide*, and the claimed invention were encompassed in known variations or in principles known in the prior art. Known variations included: LCDs with full overdrive processing and without overdrive processing – this provided the known endpoints for the adaptation investigation; performing overdrive processing of video originally in an interlaced format differently than overdrive processing of video originally in a progressive format in order to overcome challenges specific to I-P converted signals as taught for example by *Nitta* – this teaching provides the evidence that one of ordinary skill would know to look for differences in the response of native P and I-P signals to

overdrive processing; and referring to different tables of image processing

parameters based on whether the video was originally in an I or P format as

taught for example by *Ide* – this teaching provides the evidence that one of

ordinary skill would know to use the detection of the video type as one of the

inputs used to select tables of image processing parameters specific to the

detected video type. One of ordinary skill in the art, in view of the identified

design incentives and market forces, could have implemented the claimed

variation of the prior art, and the claimed variation would have been predictable

to one of ordinary skill in the art.

        Therefore, it would have been obvious to one of ordinary skill in the art to

add P versus I-P as a lookup parameter to select between tables for overdrive

processing in addition to the parameters for temperature, taste of a user, and

environment as already existed in *Lee/Ide*, or in other words to provide tables

that contain parameters specified by the image data of the current vertical period

and the image data of the directly previous vertical period that are referred to

according to whether the input image data is interlaced or progressive.

        As to **claim 5**, in addition to the rejection of claim 4 over *Lee, Ide,* and

Nitta,:

        As described so far *Lee, Ide,* and *Nitta* discloses the claimed invention

except for the enhancing conversion parameter in a case where the input image

data is a progressive signal being larger than the enhancing conversion

parameter in a case where the input image data is an interlace signal.

Nitta further discloses that the display can be improved for some features

of I-P signals if overdrive correction is reduced or eliminated (see for example

Fig. 21); that is there was a recognized need in the art to reduce overdrive for

some features of I-P signals. Given the apparatus as disclosed by *Lee, Ide,* and

Nitta, it would have been obvious to one of ordinary skill in the art to try reducing

the overdrive correction values for I-P signals within the range of full correction to

zero correction, which represents a finite number of predictable potential

solutions to the recognized need. One of ordinary skill in the art could have

pursued the known potential solutions with a reasonable expectation of success.

As to **claim 5**, in addition to the rejection of claim 4 over *Lee, Ide,* and

Nitta,:

As described so far *Lee, Ide,* and *Nitta* discloses the claimed invention

except for the enhancing conversion parameter in a case where the input image

data is a progressive signal being larger than the enhancing conversion

parameter in a case where the input image data is an interlace signal.

Examiner takes official notice that it was well known to those of ordinary

skill in the art at the time of the invention that interlaced signals have contour

noise issues that result in image degradation with overdrive processing. As

evidence for this see for example WO0304104 to Sugino et al. (also published as

US2004/0263495 in which see for example [0013]). Thus there was a recognized need in the art to reduce overdrive for some features of I-P signals. Given the apparatus as disclosed by *Lee, Ide,* and *Nitta*, it would have been obvious to one of ordinary skill in the art to try reducing the overdrive correction values for I-P signals within the range of full correction to zero correction, which represents a finite number of predictable potential solutions to the recognized need. One of ordinary skill in the art could have pursued the known potential solutions with a reasonable expectation of success.

 Claim 15 represents the method implicit in the apparatus claimed in claim 4 and is rejected on the same grounds and arguments as claim 4.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

 A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT R. RAINEY whose telephone number is (571)270-3313. The examiner can normally be reached on Monday through Friday 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RR/
        /Amare Mengistu/
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